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The Middle Pleistocene Avifauna of Spinagallo Cave (Sicily, Italy): Preliminary Report

Marco Pavia

ABSTRACT

A preliminary study of the middle Pleistocene birds from Spinagallo Cave (Siracusa, Sicily) shows an avifauna composed of 61 species (28 Passeriformes and 33 non-Passeriformes), including Anseriformes, Falconiformes, Gruiformes, Charadriformes, and Strigiformes. Three extinct taxa, probably new to science, include a large *Tyto*, a long-legged *Athene*, and a small species of Corvidae to be described later. Paleoenvironmental reconstruction of the site indicates a temperate climate, like the present or slightly colder.

Introduction

In 1959 and 1960, many fossil bones were collected from Pleistocene cave deposits in Spinagallo Cave, near Siracusa, southeastern Sicily, Italy (Accordi et al., 1959; Accordi and Colacicchi, 1962) (Figure 1). The fossil association contains bones of mammals, especially dwarf elephants, reptiles, amphibians, and birds. The age, determined by Bada et al. (1991) from amino-acid racemization analysis of mammal bones, is about 500,000 years, or middle Pleistocene. There are no signs of human activities on the bones or in the cave, so the accumulation is not artificial. The specimens have been stored in the Museum of the Dipartimento di Scienze della Terra (Università "La Sapienza") di Roma.

The Pleistocene vertebrate fauna of mammals, reptiles, and amphibians from Spinagallo has been described by various authors (Accordi, 1962; Ambrosetti, 1968, 1969; Petronio, 1970; Kotsakis, 1977, 1984; Kotsakis and Petronio, 1980). The eastern part of Sicily, during the middle Pleistocene, was inhabited by two species of dwarf elephants (Ambrosetti, 1968), a giant species of Gliridae (Ambrosetti, 1969; Petronio 1970), and an exctinct lizard (Kotsakis, 1977, 1984; Delfino, pers. comm., 1995). The mammal and reptile faunas seem to indicate that Sicily was isolated during most of the Pleistocene and was colonized by a typically mainland fauna only in the late Pleistocene.

Marco Pavia, Dipartimento di Scienze della Terra, Via Accademia delle Scienze 5, 10123 Torino, Italy.

The fossil avifauna consists of almost 1000 bones that have been identified by comparison with recent skeletons in the Museo Regionale di Scienze Naturali di Torino, the Regalia Collection stored in the Institut de Paléontologie Humaine de Paris, and the collections of the Département des Sciences de la Terre de l'Université de Lyon.

Systematic List

The avifauna of Spinagallo is composed of 61 taxa, which are listed according to the nomenclature of Voous (1973, 1977).

Non-passeriformes	Passeriformes
Geronticus eremita	*Calandrella brachydactyla*
Anser erythropus	*Lullula arborea*
Branta sp.	*Hirundo* sp.
Anas penelope	*Anthus* sp.
Anas querquedula	*Prunella modularis*
Marmaronetta angustirostris	*Erithacus rubecula*
Accipiter gentilis	*Oenanthe* cf. *hispanica*
Accipter nisus	*Monticola solitarius*
Falco tinnunculus	*Turdus* sp. 1
Falco columbarius	*Turdus* sp. 2
Falco subbuteo	*Sylvia* sp.
Falco eleonorae	*Phylloscopus sibilatrix/collybita*
Coturnix coturnix	*Lanius senator*
Rallus aquaticus	*Pica pica*
Grus sp.	*Pyrrhocorax graculus*
Recurvirostra avosetta	Corvidae genus and species indet.†
Scolopax rusticola	*Sturnus* sp.
Larus minutus	*Petronia petronia*
Larus ridibundus	*Fringilla coelebs/montifringilla*
Columba livia	*Serinus* sp.
Columba livia/oenas	*Carduelis chloris*
Columba palumbus	*Carduelis* sp.
Streptopelia turtur	*Pyrrhula pyrrhula*
Cuculus canorus	*Coccothraustes coccothraustes*
Tyto, species undescribed†	*Emberiza* sp. 1
Otus scops	*Emberiza* sp. 2
cf. *Surnia ulula*	*Emberiza* sp. 3
Athene, species undescribed†	Passeriformes indet.
Asio otus	
Caprimulgus cf. *europaeus*	
Apus apus/pallidus	
Apus melba	
Picus viridis	
Dendrocopos leucotos	

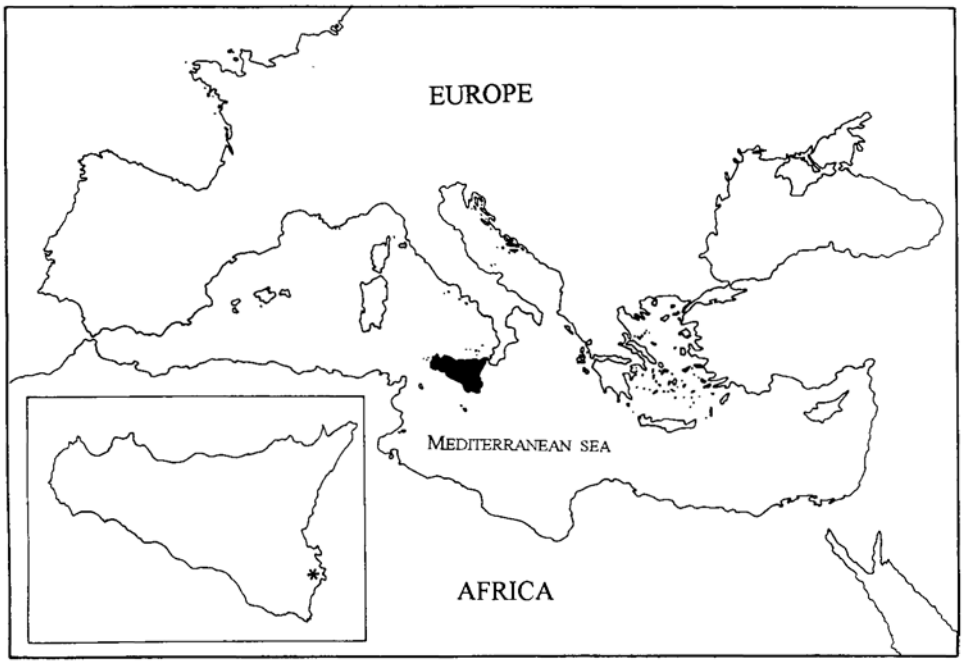

FIGURE 1.—Map of Sicily (shaded); inset shows the position of Spinagallo cave (*).

Remarks

The Pleistocene avifauna contains two new extinct species that are probably endemic to Sicily: a giant *Tyto,* similar in size to *Tyto robusta* (Ballmann, 1973), and a new species of *Athene,* characterized by having the legs longer than in *Athene noctua* but shorter than in *Athene cretensis* (Weesie, 1982). Descriptions of both are in preparation. Another extinct species, an undetermined Corvidae, probably the same as found in the Balearic Islands (Alcover et al., 1992), was found in Spinagallo and in another cave in Sicily of the same age (Alcover, pers. comm., 1995). Bones of a large crane, similar in size to the living *Grus antigone,* also were found.

The presence of apparently endemic forms, combined with other typical features of insular avifaunas (Alcover et al., 1992), seems to confirm the isolation of Sicily during the middle Pleistocene, as previously suggested by the mammalian fauna. One of the most evident characteristics of fossil island avifaunas is the absence of Galliformes, with the exception of *Coturnix coturnix* (Alcover et al, 1992), which is true of Spinagallo. This is in contrast to mainland cave avifaunas, which are dominated by members of this order. On the Mediterranean islands, remains of *C. coturnix* are common, doubtless because of the migratory habits of the species. The absence of partridges of the genus *Alectoris* also is typical, although they are now present on Mediterranean islands, probably due to human introduction, and are very common. The presence of Laridae differs from the normal composition of insular avifaunas (Alcover et al., 1992) but can be explained by the short distance between Sicily and the mainland, where fossil and recent gulls are both recorded.

The composition of the avifauna suggests a coastal environment with a cliff close to the sea; the same Miocene cliff in which the cave was formed. This physiographic feature supported many species, such as *Geronticus eremita, Falco eleonorae, F. tinnunculus, Tyto* (species undescribed), *Columba livia,* Apodidae, and *Pyrrhocorax graculus.* Inland, on top of the cliff, it is supposed that there was an extension of Mediterranean forest with large trees and dense undergrowth, appropriate habitat for *Accipiter gentilis, A. nisus, Falco subbuteo, Scolopax rusticola,* Strigidae (except the probable vagrant *Surnia ulula*), *Columba palumbus, Streptopelia turtur, Caprimulgus europaeus,* all the Picidae, and many Passeriformes. Along the sea, wetland is indicated by the Anseriformes and other waterbirds such as Laridae. The records of *Falco columbarius, Caprimulgus europaeus,* and many Passeriformes, such as Alaudidae, *Anthus* sp., *Lanius senator, Oenanthe hispanica, Carduelis* sp., and the Emberizidae, suggest that open, dry country with scattered bushes also was present. The number of birds of prey in the Spinagallo fauna is high, possibly because many raptors lived in or near the cave.

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